

CLAIMS:

1. A method for patterning a device layer using a patterned stamp, comprising the steps of:

- (1) providing a substrate;
- (2) bringing the patterned stamp into contact with the substrate;
- (3) removing the patterned stamp from the substrate;

characterised in that step (2) is carried out so that the surface energy of the substrate is modified in accordance with the pattern; and that the method further comprises a step;

(4) depositing a solution of a device layer on the substrate after the patterned stamp has been removed; whereby the surface energy of the substrate determines the deposition pattern of the device layer.

2. A method according to claim 1, wherein the patterned stamp is a patterned elastomer.

3. A method according to claim 1 or claim 2, wherein the device layer comprises a polymer.

4. A method according to any one of claims 1 to 3, wherein the topography of the surface of the substrate is unchanged after the patterned stamp has been brought into contact with the substrate.

5. A method according to any one of claims 1 to 4, wherein the step of depositing the device layer is by spin coating or inkjet printing.

6. A method according to any one of the preceding claims, wherein the solvent is selected from the group consisting of xylene, ortho-xylene, toluene, benzene, mesitylene, chloroform, dichloromethane or mixtures thereof.
7. A method according to any one of the preceding claims, wherein the feature size of the pattern of the patterned stamp is in the range of from 20 microns to 500 microns.
8. A method according to any one of the preceding claims, wherein in step (2) the surface energy in step (2) of any portion of the surface of the substrate that is in contact with the patterned stamp is modified.
9. A method according to claim 8, wherein the substrate comprises a polymer.
10. A method according to claim 9, wherein the polymer is poly (3,4-ethylenedioxythiophene) or polyaniline.
11. A method according to any one of claims 8 to 10, wherein the substrate is charged.
12. A method according to any one of claims 8 to 11, wherein the patterned stamp is brought into contact with the surface of the substrate at room temperature and at ambient humidity.
13. A method according to any one of claims 1 to 7, wherein the patterned stamp is used as a mask in step (2) and step (2) includes subjecting any portion of the surface of the substrate that is not in contact with the patterned stamp to a surface energy modifying process.

14 A method according to claim 13, wherein the surface energy modifying process includes a step of exposing any portion of the surface of the substrate that is not in contact with the patterned stamp to UV radiation.

15 A method for making an electrical, mechanical, or electromechanical device including a method for patterning a device layer according to any one of the preceding claims.

16 A method according to claim 15 wherein the substrate provided in step (1) is supported by one or more further device layers, at least one of which may be a patterned device layer.

17. A method according to claim 15 or claim 16, including a step:

(5)depositing one or more further device layers on the device layer deposited in step (4).

18. A method according to any one of claims 15 to 17, wherein the method is for manufacturing an optoelectronic device.

19. A method according to claim 18, wherein the optoelectronic device is selected from an OLED, a transistor, a diffraction grating, a microcircuit, and a microfluidic device.

20. A method according to claim 19, wherein the optoelectronic device is an OLED.

21. An electrical, mechanical, or electromechanical device obtained by the method as defined in any one of claims 15 to 19.

22. An electrical, mechanical, or electromechanical device obtainable by the method as defined in any one of claims 15 to 19.

23. An electrical, mechanical, or electromechanical device according to claim 21 or 22, wherein the device is an OLED.